

Amendments to the Drawings

Corrected drawings are submitted herewith in compliance with 37 C.F.R. § 1.121(d).
Replacement sheets are provided for Figs. 1-7.

Attachment: Replacements sheets 1/5-5/5

REMARKS

The specification is amended herein to correct a typographical error, and the drawings have been corrected. No other amendments are presented. Claims 1-20 remain pending in the captioned case.

Objection to the Drawings

An objection was lodged against the drawings for failure to comply with 37 C.F.R. § 1.121(d). In response thereto, corrected drawings are submitted herewith to obviate this objection in its entirety.

Section 103 Rejection

Claims 1, 2, 6-10, and 14-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,088,044 to Kwok et al. (hereinafter “Kwok”) in view of U.S. Patent No. 6,493,868 to DaSilva (hereinafter “DaSilva”). Claims 4, 5, 12, 13, 19, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kwok, DaSilva, and U.S. Patent Application Publication No. 2003/0051228 to Martinez (hereinafter “Martinez”). Claims 3 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kwok, DaSilva, and U.S. Patent Application No. 2002/0130871 to Hill (hereinafter “Hill”).

To establish a case of *prima facie* obviousness of a claimed invention, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Second, there must be a reasonable expectation of success. As stated in MPEP 2143.01, the fact that references can be hypothetically combined or modified is not sufficient to establish a *prima facie* case of obviousness. *See In re Mills*, 916 F.2d. 680 (Fed. Cir. 1990). Finally, the prior art references must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d. 981 (CCPA 1974); MPEP 2143.03. Specifically, “all words in a claim must be considered when judging the patentability of that claim against the prior art.” *In re Wilson* 424 F.2d., 1382 (CCPA 1970).

Using these standards, Applicants contend that the combination of Kwok and DaSilva do not teach or suggest all features of the currently pending independent claims 1, 8, and 16, some distinctive features of which are set forth in more detail below.

Kwok and DaSilva do not teach, suggest, or motivate, nor are any reasons given for such, for the claimed graphical user interface (GUI) window that includes a breakpoint field that, upon receiving user input, selects a particular instruction address within the first sequence of instruction addresses shown in a particular stage of a processor pipeline.

Independent claim 8 describes a software development tool and, particularly, a graphics rendering engine. Independent claims 1 and 16 recite similar limitations. The engine receives a first instruction address and produces a graphical user interface window. An example of such a window is set forth in Fig. 5 of the present specification. A breakpoint field 66 that, upon receiving user input, selects a particular instruction address, such as address 0x1000 (Specification -- pg. 10, lines 11-27; Fig. 5). Thus, when a user highlights 67 a field within breakpoint area 66, the corresponding instruction address will be highlighted, that address being within a first sequence of instruction addresses (0x1000-0x1018) (Specification -- pg. 10, line 11 – pg. 11, line 27; Fig. 5). Specifically, the selected address is shown in particular stage of a processor pipeline. For example, the selected address 0x1000 is shown in the processor pipeline stage “EX” or execute stage (Specification -- pg. 9, line 4 – pg. 10, line 9; Figs. 3-5).

The Office Action concedes that “Kwok does not explicitly teach the graphical user interface window that includes a breakpoint field” (Office Action, pg. 3). However, the Office Action alleges that DaSilva teaches a breakpoint field. Applicants respectfully disagree. While DaSilva teaches “breakpoint,” nowhere in DaSilva is there any mention of a breakpoint field within a graphical user interface rendering, much less a breakpoint field that can select a particular instruction address within a sequence of instruction addresses. Instead, DaSilva simply mentions use of breakpoints in order to monitor variables, and information within memory and registers (DaSilva -- col. 2, lines 54-61). The breakpoints are not breakpoints placed in a GUI rendering that can be selected by a user, and certainly not when selected presents a particular instruction address shown in a particular stage of a processor pipeline. The deficiencies of DaSilva are compounded in Kwok.

The Office Action alleges that Kwok discloses “upon receiving user input via a pointing device selects a particular instruction address within the first sequence of instruction addresses shown in a particular stage of a processor pipeline” (Office Action, pg. 3). Applicants respectfully disagree. The Office Action points to col. 4, lines 1-5, in Kwok for containing the claimed subject matter. Upon reviewing Kwok, nowhere is there any mention of selecting an instruction address, selecting an instruction address within a first sequence of instruction addresses, or selecting a particular instruction address shown in a particular stage of a processor pipeline. Instead, Kwok merely mentions rendering a graphics order within a main thread relative to a child thread (Kwok -- Abstract; col. 4, lines 1-20). The throughput associated with multi-processor systems depends on the manipulation of data between a main thread and a child thread, such data being assigned to particular input buffers or task buffers (Kwok -- col. 5, line 40 – col. 6, line 21; Figs. 4-5). Instead of allowing for the selection of a particular instruction address shown at a particular stage of a processor pipeline, graphics control processor 110b manages and controls the graphics pipeline and rasterizer components associated with rasterizer 110d, z-buffer 110e, and frame buffer 110f in order to optimally use the multiple main and child threads associated with multi-processor applications in a graphics rendering environment (Kwok -- col. 4, line 5 – col. 5, line 63; Fig. 4).

In response to the recent U.S. Supreme Court decision in *KSR Int’l Co. v. Teleflex, Inc.* (U.S. 2007), new guidelines were set forth for examining obviousness under 35 U.S.C. § 103. The U.S. Supreme Court reaffirmed the *Graham* factors and, while not totally rejecting the “teachings, suggestion, or motivation” test, the Court appears to now require higher scrutiny on the part of the U.S. Patent & Trademark Office. In accordance with the recently submitted guidelines, it is “now necessary to identify the reason” why a person of ordinary skill in the art would have combined Kwok and DaSilva in the manner presently claimed. Since neither Kwok nor DaSilva describe a breakpoint field rendered from a GUI window that can be user selected for displaying a particular instruction address in a particular stage of a processor pipeline, Applicants believe that the combination of Kwok and DaSilva cannot render present independent claims 1, 8, and 16 obvious.

Kwok and DaSilva do not teach, suggest, or motivate, nor are any reasons given for such, for the claimed breakpoint field that, upon receiving user input, displays all instruction addresses within the first sequence of instruction address along with corresponding stages of the processor pipeline during a clock cycle in which the particular instruction address is within the particular stage. Again, independent claim 8 describes patentable subject matter for use of a breakpoint field for displaying all instruction addresses within the first sequence of instruction address, along with corresponding stages of the processor pipeline. Present independent claims 1 and 16 recite similar limitations. Applicants respectfully request the Examiner to point out where, within Kwok or DaSilva, is there displayed instruction addresses along with displayed corresponding stages of a processor pipeline, as presently claimed. Moreover, Applicants request explicit reasons be given as to how or why a skilled artisan would combine DaSilva with Kwok to arrive at the claimed subject matter.

It may be that the Examiner does not have a full appreciation for that which is claimed. Applicants respectfully request the Examiner to review at least the “Background” and “Summary of the Invention” sections of the present specification describing the use of breakpoint fields and the implementation of a “freezing” function so that various stages of instructions placed within a processor pipeline are frozen in time based on the displayed clock cycle. Such a rendering is set forth in present Fig. 5 and described in the corresponding text of the specification.

Kwok and DaSilva do not teach, suggest, or motivate, nor are any reasons given for such, for the claimed instruction address field that, upon selection by a user via the pointing device, allows the user to move said another at least one instruction address.

Claim 8 not only allows for rendering of a particular instruction address, but also allows a user to move an instruction address via a pointing device in order to optimize the flow of instructions through the processor pipeline. For example, a user can move instruction address 0x1000 to designate or highlight more execution stages within the first sequence of instructions in order to improve the processor throughput (Specification -- pg. 4, lines 12-16; pg. 4, line 28 – pg. 5, line 3; pg. 11, line 16 – pg. 12, line 10; pg. 16, line 27 – pg. 17, line 7; Fig. 5).

Neither Kwok nor DaSilva, either singularly or in combination, mention an instruction address field that can be selected by a user pointing device, much less one that can be moved via such pointing device as presently claimed. Instead of moving an instruction address, Kwok only describes a user interface to modify “three-dimensional models/views defined by the graphics data stored in the memory” (Kwok -- col. 5, lines 3-8). Certainly, graphics renderings or primitives taught in Kwok are not instruction addresses as claimed. In fact, Kwok specifically describes such renderings as a solid, line, surface, or possibly triangles defined in three vertices (Kwok -- col. 5, lines 50-54; cols. 8-10).

For at least the reasons set forth above, claims 1, 8, and 16 are believed patentably distinct over the cited art. Moreover, dependent claims 2-7, 9-15, and 17-20 are also believed patentably distinct for at least the same reasons as their respective base claim. Accordingly, removal of this rejection is respectfully requested.

CONCLUSION

The present amendment and response is believed to be a complete response to the issues raised in the Office Action mailed June 27, 2007. In view of the remarks herein, Applicants assert that pending claims 1-20 are in condition for allowance. If the Examiner has any questions, comments or suggestions, the undersigned attorney earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to LSI Logic Corporation deposit account no. 12-2252.

Respectfully submitted,

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